SECRET

[redacted] 25X1

Central Intelligence Agency

Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

28 February 1983

Chinese Machine Tools: An Emerging Competitor in the World Market [redacted]

25X1

Summary

Over the past two years the Chinese have steadily upgraded the technical level of their machine tool industry with foreign assistance. Beijing appears to be preparing to enter the international market during the 1980s as an aggressive exporter of machine tools. Some of these are technologically sophisticated. Low start-up, overhead, and manufacturing costs have enabled China to price machine tools below prevailing market levels, making it a potentially serious competitor to the newly industrializing nations such as Taiwan and South Korea. An ability to produce sophisticated machine tools also will enhance China's capability to manufacture higher quality military equipment. [redacted] 25X1

Although the world machine tool market has been sharply depressed in recent years, the Chinese have managed to achieve steady increases in exports. Sales have more than doubled since the late 1970s to a level of about $70 million in 1982. The Chinese are now offering highly attractive credit terms and are steadily expanding their market in less developed countries and have gained a foothold in North America, Western Europe, and Japan. Chinese sales, however, still account for less than 1 percent of total world exports of machine tools. Although improvement of the world economy could lead to a sharp increase in Chinese machine tool exports within this decade, we expect the Chinese to pose no major threat to Japanese sales of the most sophisticated models. [redacted] 25X1

This memorandum was prepared by [redacted] 25X1
the China Division of the Office of East Asian Analysis.
[redacted] 25X1

25X1

EA M 83-10040

SECRET

[redacted]

[redacted] 25X1

[redacted] 25X1

25X1

Foreign Assistance Crucial to Development

In 1979, the Chinese started to solicit assistance from foreign companies to help modernize their machine tool industry. Since that time, at least a dozen firms have signed licensing or coproduction agreements with China. This assistance is beginning to show results in increased production and exports of more sophisticated machine tools, including machines with numerically controlled (NC) and computer numerically controlled (CNC) systems.* 25X1

Several American firms have signed coproduction agreements with Chinese machine tool factories. One firm has provided China with the technology to produce CNC milling machines under license. The Chinese manufacture the manual part of the machine, and the US company supplies the necessary electronics. The contract calls for production of at least 600 milling machines over a period of five years, with initial production starting last year. The terms of the agreement give China the right to sell the US-designed milling machine in Asia, leaving the rest of the world to the US company. 25X1

Two or three West European companies have struck similiar deals with the Chinese. A French firm, for example, supplied the Chinese with all of the necessary technical data to coproduce lathes for export. Under the terms of the licensing arrangement, China has the right to sell the lathes in Japan and Southeast Asia under a Chinese trademark. The French firm has the rest of the world. The agreement stipulates that after termination of the contract, China will retain the right to continue production and exports of the lathe. 25X1

Japan--Still Number One

The Japanese have been the most prominent in helping to develop China's machine tool industry. At least four or five Japanese companies have coproduction or licensing agreements with Chinese plants. Yamazaki Machinery Corporation, for instance, signed a licensing arrangement in 1979 which calls for the Chinese to produce 5,000 small lathes and 1,600 large lathes over a period of five years. In September 1980, Yamazaki signed another agreement with a Chinese plant to produce 1,000 general-purpose lathes over a five year period. Precise terms of the

---

* The use of NC and CNC systems on machine tools makes extremely precise, complex, and repetitive machining operations possible. Contoured shapes can be handled in relatively few steps, greatly increasing machine efficiency and flexibility. One advanced machine tool often can replace several pieces of nonautomated equipment. 25X1

25X1

25X1

contracts are unknown, but Yamazaki appears to have worldwide marketing rights for all production under license. 25X1

The foreign company that has supplied the greatest assistance to the Chinese machine tool industry in recent years is the well-known Japanese firm Fanuc, Limited. Fanuc makes world-class controls for machine tools, and the Chinese started producing these controls under license in 1981. That same year Fanuc also agreed to install NC and CNC systems on Chinese machine tools produced for export. In addition, Fanuc is overseeing construction of a plant in China to produce two to four axis machining centers. After production begins at the new facility, the machining centers will be shipped to Hong Kong where Fanuc employees will add the electrical computer control systems. 25X1

China Offers Low Labor Costs and a Potential Market

Low labor costs primarily explain the reason behind the decision of foreign companies to help the Chinese upgrade their machine tool industry. Assembling machine tools is a highly labor intensive operation, and coproduction in China of export models gives participating foreign companies a marketing edge. When Yamazaki signed the licensing agreement with China in 1980, for example, the company cancelled a similar agreement with a South Korean firm because wage rates in Korea had risen sharply. 25X1

Another reason foreign companies have agreed to coproduction and licensing agreements is the hope that they can eventually gain a foothold in the Chinese market. This hope so far has been illusory. Demand for machine tools in China has declined sharply in recent years because of Beijing's economic readjustment policies. The Chinese have drastically cut investment in construction of new heavy industrial plants, traditionally a primary consumer of machine tools. As a result, production of Chinese machine tools has declined by almost half since 1978 (Table 1). 25X1

25X1

Table 1
China: Machine Tool Production

Year	Units (1,000)
1978	183
1979	140
1980	134
1981	103
1982	100
1985 (target)	100

[redacted] 25X1

Aggressive Marketing and Financing

The Chinese have strong marketing contacts in Asia and are attempting to develop outlets in other areas of the world. [redacted] 25X1 In another attempt to drum up business, the Chinese last year exhibited some of their most advanced NC models at an international machine tool show held in Chicago. [redacted] 25X1

In an unprecedented move to stimulate exports of all types of machinery and equipment, the Bank of China announced earlier this year that it plans to make low interest loans available to prospective buyers. Export credits to foreign customers are expected to total $500 million between 1983 and 1985. Buyers of Chinese machine tools qualify for such loans and undoubtedly will benefit from the cost advantage of this latest Chinese initiative to boost overseas sales of Chinese-produced machinery and equipment. [redacted] 25X1

[redacted] 25X1 the Chinese are currently packaging "very attractive deals" for buyers of machinery. In addition to good credit terms, the Chinese are offering highly competitive prices, fixed prices for up to three years, and guaranteed exclusive production for individual customers. Moreover, the Chinese are taking special pains to offer better terms than are available in Taiwan. To undercut Taiwanese companies, the Chinese have offered prices as much as 25 percent lower and have agreed in some cases to credit terms that call for no interest or payments for 90 days. These liberal policies clearly indicate that China intends to increase its share of the world market for machine tools and other machinery,

particularly at the expense of Taiwan and other newly industrializing countries (NICs). [redacted] 25X1

PRC Sales Have Doubled

The Chinese in recent years have vigorously pushed exports of machine tools in an attempt to increase their miniscule share of the world market. They have succeeded in more than doubling machine tool sales since 1978, from less than $30 million to about $70 million in 1982. Nevertheless, the Chinese still supply less than 1 percent of total world exports of machine tools (Table 2). [redacted] 25X1

Table 2
Machine Tool Exports

	China (Million US$)	Non-Communist Countries (Billion US$)	China as a Percent of Total
1978	29	6.5	.4
1979	41	7.5	.5
1980	51	9.2	.6
1981	64	8.8	.7
1982(est)	70	8.4	.8

[redacted] 25X1

The bulk of China's machine tool exports has traditionally gone to less developed countries (LDCs), primarily in Southeast Asia. Hong Kong, however, is by far the largest customer, buying more than 20 percent of China's total machine tool exports. Most of the machine tools sold to Hong Kong are re-exported. Machine tools exported to Hong Kong and directly to the LDCs have been standard units that contain less than state-of-the-art technology but are well suited to handle the general-purpose machining jobs needed in underdeveloped economies. [redacted] 25X1

In recent years, the Chinese have also been able to penetrate markets in such developed countries as the United States, Canada, and West Germany (Table 3). Sales to the United States, for example, accounted for about 12 percent of total Chinese machine tool exports in 1982, up from only 4 percent in 1980. US firms imported more than $4 million worth of Chinese-made machine tools in 1981, and preliminary data indicate that the value may have doubled in 1982. The Chinese have been able to increase exports at a time when sales by the US machine tool industry have fallen sharply because of the recession. China's newest NC models are meant for export to developed countries, and the Chinese hope to increase their foothold in the US market as the business climate improves and capital spending picks up. The Chinese undoubtedly want to emulate the success of Taiwan, which doubled machine tool exports to the United States from $50 million in 1978 to $100 million in 1981. [redacted] 25X1

25X1

Table 3

Principal Customers for Chinese Machine Tools, 1981
(Million US$)

Hong Kong	12.8
Singapore	7.6
United States	4.5
Indonesia	3.2
Australia	1.8
Canada	1.4
West Germany	.9
Japan	.5
Other (mainly LDCs)	32.0

25X1

Growth Potential is Substantial

By the mid-to-late-1980s the Chinese could become a growing competitor in the international machine tool market if they can maintain quality production at low cost. China claims that it currently exports 123 different machine tools that meet international standards and that all Chinese-made tools will reach such standards by 1985. When current coproduction and licensing agreements expire over the next five years, the Chinese should have strong marketing contacts and a well established distribution network. They also will have in place a modern production capability, technical know-how obtained from foreign partners, and experience in manufacturing particular lines of machinery to international standards. 25X1

China's gain in market share during the 1980s probably will come at the expense of the newly industrializing countries (NICs) such as Taiwan and South Korea. The NICs have substantially increased production and exports of machine tools during the past decade because of their low-wage structure. Wage rates in these countries, however, have increased substantially in recent years. This trend has left the Chinese with a clear competitive edge which they will undoubtedly attempt to exploit in pushing exports of machine tools. Nevertheless, we expect that machine tool manufacturers in the West, particularly in Japan, would maintain their strong technological and marketing lead over China and continue to dominate a major part of the international market. 25X1

Development of the machine tool industry will also have implications for military modernization by reducing China's

25X1

25X1

25X1

dependence on imports for the defense industries. China's military industries have historically been major buyers of foreign-produced NC machine tools because domestic models were not available. Imported machine tools are used to produce components for conventional and advanced weapons that require machining to precise tolerances. Demand for foreign tools should soften as the Chinese gradually modernize their defense plants with increasingly available domestically-produced NC models.

25X1

25X1

SUBJECT: Chinese Machine Tools: An Emerging Competitor in the World Market [redacted] 25X1

Distribution:

National Security Council

1 - Charles Carr, Intelligence Coordination
1 - David Laux, Senior Staff Member for China, Taiwan and Hong Kong

Department of State

1 - William F. Rope, Director, Office of Chinese Affairs, Bureau of East Asian and Pacific Affairs
1 - William Root, Office of East-West Trade, Bureau of Economics and Business Affairs
1 - Richard Mueller, Office of Chinese Affairs, Bureau of East Asian and Pacific Affairs
1 - Lorraine Takahashi, Office of Chinese Affairs, Bureau of East Asian and Pacific Affairs
1 - John Danylyk, Office of Economic Analysis, Bureau of Intelligence and Research
1 - Priscilla Stowe, Office of Economic Analysis, Bureau of Intelligence and Research

Department of Treasury

1 - Patsy Haas, Office of East-West Policy

Department of Defense

1 - COMO Steward A. Ring, USN, Director, East Asia and Pacific Region

Defense Intelligence Agency

1 - [redacted] DB-4E2 25X1

Department of Commerce

1 - David Peterson, Office of Intelligence Liaison
1 - Robert Perito, Chief, China Office, East Asia and Pacific
1 - Jeffrey Lee, China Office, East Asia and Pacific

Department of Agriculture

1 - Charles Liu, International Economics Division, Economic Research Service

Special Trade Representative

1 - William C. Triplett II, Director, East-West Affairs

Sanitized Copy Approved for Release 2010/07/22 : CIA-RDP85T00287R000400810001-0

<u>National Security Agency</u>

1 - [redacted] Chief, B4 25X1
1 - Chief, B41

<u>Central Intelligence Agency</u>

2 - DDI
1 - Executive Director
1 - NIO/EA
1 - Chief, China [redacted] DDO 25X1
1 - C/NIC
1 - PDB
2 - FBIS/Analysis Group/China
1 - [redacted] FBIS/NEAAD/CE 25X1
1 - OGI/Civil Technology Industry Division
1 - OCR/EA
1 - D/OEA
1 - C/Production/OEA
1 - Chief, China Division
1 - OEA/CH/DEV
1 - OEA/CH/DOM
1 - OEA/CH/FOR
1 - OEA/CH/DEF
5 - CPAS/IMB/CB
1 - CH/EA [redacted] 25X1

Sanitized Copy Approved for Release 2010/07/22 : CIA-RDP85T00287R000400810001-0